

CLAIMS

I claim:

- 5 1. A motorized recreational vehicle with living space and storage space comprising:
a vehicle body of unibody construction having an front end, bottom, sidewalls, and
top, and being further configured with an openable rear end and an access door proximate
said front end,
steerable front wheel suspension system,
10 rear wheel suspension system,
an engine and drive train system connected to at least one of said front wheel and
rear wheel suspension systems,
a driver's station disposed within said vehicle body,
a driver's steering console at said driver's station connected to said steerable front
15 wheel suspension system providing directional control capability for said vehicle,
at least one expandable living compartment disposed within said vehicle body, said
living compartment comprising a floor structure spaced above said bottom;
said expandable living compartment comprising at least one extendible component
having first, second, and third walls, a floor and a roof, said walls, floor and roof each
20 having interior and exterior surfaces and inboard and outboard sides, said extendible
component being extendible from within said living compartment through a respective
sidewall opening of said vehicle body; and
at least one storage area disposed within said vehicle body; said storage area at least
partially extending between said bottom and said floor structure, said storage area being
25 accessible at least through said openable rear end.
2. A motorized recreational vehicle according to claim 1, said floor of said extendible
component when said extendible component is fully extended being substantially level
with said floor structure of said living compartment.
- 30 3. A motorized recreational vehicle according to claim 2, said floor structure comprising

at least one retractable floor panel and floor panel operating mechanism configured such that when said extendible components are extended, said floor panel is extendible to and is supportable in a position flush with said interior surface of said floor of said extendible component, and such that said floor panel is retractable beneath the level of said floor of said extendible component for retraction of said extendible component.

4. A motorized recreational vehicle according to claim 3, said floor panel operating mechanism comprising a fixed floor panel inboard edge support, a floor panel lifting mechanism, and a retractable floor panel outboard edge support.

5. A motorized recreational vehicle according to claim 4, said floor panel lifting mechanism comprising at least one pneumatic actuator disposed between said floor structure and said floor panel.

6. A motorized recreational vehicle according to claim 1, said drivers steering console being retractable from said driver's station when not in use.

7. A motorized recreational vehicle according to claim 2, said storage area extending vertically upward behind said living compartment.

8. A motorized recreational vehicle according to claim 7, said storage area comprising upper and lower levels within said storage area and a mechanism for elevating objects from ground level to said upper level.

9. A motorized recreational vehicle according to claim 7, comprising a rear end ramp extendible to ground level for delivering and removing a vehicle into and out of said storage area.

10. A motorized recreation vehicle according to claim 1, said openable rear end comprising a hatch hingedly attached to said vehicle body, said hatch configured with components of a heat exchanger airflow system servicing said living compartment.

11. A motorized recreational vehicle according to claim 2, said sidewall opening extending upward to the outboard edge of said top, the inboard edge of said roof configured for mating with the outboard edge of said top.

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12. A motorized recreational vehicle according to claim 2, wherein said inboard edge of said roof of said extendible component is configured to mate with the outboard edge of said interior of said top of said vehicle body thereby forming a substantially flush joint providing a continuous ceiling profile and a continuous exterior top profile extending
10 across said expandable living compartment.

13. A motorized recreational vehicle according to claim 12,

said inboard edge of said roof of said extendible component comprising an inwardly directed, upwardly biased, downwardly deformable interior flap,

15 said outboard edge of the top within said sidewall opening comprising a hinged exterior flap,

said hinged exterior flap lying secured against the exterior surface of the outboard wall of said extendible component and said interior flap normally contacting the interior surface of said top when said extendible compartment is retracted,

20 said interior flap being deformable downward for clearance and said exterior flap being free for outward motion during extension of said extendible component,

said interior flap being reformable upward for engagement with said outboard edge of said top, said exterior flap being disposed proximate thereto thereby forming said joint.

25 14. A motorized recreational vehicle according to claim 13, said deformable interior flap comprising a first and second stressed skins defining a longitudinal chamber within, said chamber comprising a variable volume by which at least one said skin may be deformed for upward and downward movement of said deformable flap.

30 15. A motorized recreational vehicle according to claim 14, said chamber is at least partially filled with compressible foam.

16. A motorized recreational vehicle according to claim 13, said vehicle further comprising a flexible membrane connecting the perimeter of said sidewall opening with said extendible component, thereby isolating the interior of said vehicle from the exterior of
5 said vehicle with respect to said sidewall opening.

17. A motorized recreational vehicle according to claim 13, said vehicle body comprising stressed skin foam construction using substantially resilient foam materials between skins.

10 18. A motorized recreational vehicle comprising:
a vehicle body of substantially unibody construction having front end, bottom, sidewalls, and top;
a suspension system;
an engine and drive train;
15 a living compartment; and
wherein said motorized recreational vehicle has a wet weight that is less than 80% of a gross vehicle weight rating of said vehicle.

19. A motorized recreational vehicle according to claim 18, said motorized recreational
20 vehicle having a wet weight that is less than 65% of said gross vehicle weight rating of said vehicle.

20. The motorized recreational vehicle according to claim 18 wherein said unibody construction comprises stressed skin foam core laminates.

25 21. The motorized recreational vehicle according to claim 20 wherein said foam core laminates are bonded together using a high density foam bond.

22. The motorized recreational vehicle according to claim 20 wherein said foam core
30 laminates have interior and exterior skins, said skins having a plurality of window apertures for the mounting of windows, each said window aperture having an integral edge

flange, said apertures in said exterior skin being smaller than respective said apertures in said interior skin thereby resulting in a gap between respective said edge flanges, said gap being filled with a thermally non-conductive material.

5 23. The motorized recreational vehicle of claim 18 further comprising a plurality of pockets within said sidewalls and front end of said vehicle body, said pockets configured to receive stowable side windows and a stowable windshield.

24. A deformable member comprising

10 a variable volume chamber having anterior and posterior ends, enclosed by at least two flexible surface skins and anterior and posterior flexible membrane chamber ends, each said skin having a length and parallel first and second ends to said length, said first skin being longer than said second skin, said first ends joined in a fixed, parallel relationship, said second ends joined in a fixed, parallel relationship, and

15 a control for manipulating the volume of said chamber such at least one skin is placed in a concave configuration of variable radius.

25. A deformable member according to claim 24, a portion of said volume comprising a flexible, non-compressible material.

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26. The deformable member of claim 24 wherein said deformable member is disposed within a fluid as a flow control surface.

25 27. The deformable member of claim 24, wherein said first ends are attached to a reference structure.

28. The deformable member of claim 24, wherein at least one of said anterior and posterior ends of said deformable member are attached to a reference structure.

29. The deformable member of claim 26 wherein said flow control surface is chosen from the group of fluid flow control surfaces consisting of wings, ailerons, stabilizers, elevators, rudders, vanes, valves, shunts, and trim control flaps.

5 30. The deformable member of claim 24 wherein said deformable member is a propulsion mechanism for use in a fluid medium.

31. The deformable member of claim 24 wherein said deformable member forms at least part of a roof of a slide out component of a motorized recreational vehicle.

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32. The deformable member of claim 31 wherein said slide out has anterior and posterior walls having interior and exterior skins, said exterior skins being elastically connected to said anterior and posterior ends of said deformable member by exterior side wall membranes extending from said flexible membrane chamber ends, said interior skins
15 connected to said deformable member by interior elastic membranes.

33. A motorized recreational vehicle comprising:

a vehicle body of substantially unibody construction having front end, bottom, sidewalls, rear and top;

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a suspension system;

an engine and drive train;

a living compartment; and

at least one storage compartment below the floor of the living compartment, at least a portion of said storage compartment configured as a garage accessible to at least one
25 automobile through an openable hatch disposed in said rear of said vehicle body.

34. The motorized recreational vehicle according to claim 33 wherein said storage compartment extends upwardly behind said living compartment.

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35. The motorized recreational vehicle according to claim 34 wherein said storage compartment is accessible through a plurality of hatches located along said sidewalls.

36. The motorized recreational vehicle of claim 33 wherein said garage is configured to receive at least two said automobiles.

5 37. The motorized recreational vehicle of claim 36 wherein said automobiles are chosen from the group of automobiles consisting of sub-compact cars, compact cars, midsize cars, sports cars, sport utility vehicles, light pick-up trucks, and full size cars.

10 38. The motorized recreational vehicle of claim 33 wherein said hatch is configured to act as a ramp for the loading of said automobile.

39. The motorized recreational vehicle of claim 38 wherein said automobile is secured to said ramp and raised to a vertical orientation with the closing of said hatch.

15 40. The motorized recreational vehicle of claim 34 wherein said garage further comprises upper and lower levels disposed posterior to said living compartment.

20 41. The motorized recreational vehicle of claim 33 wherein said hatch comprises interior and exterior surfaces, first, second, third and fourth edges, and is hingeably connected to said vehicle body along one edge, adjacent opposing said edges being configured with air ducts providing a means of communication to a heat exchanging unit within said hatch.

42. An expandable living compartment in a motorized recreational vehicle, said living compartment comprising:

25 an elevated portion of said motorized recreational vehicle, said portion comprising a roof, floor, front end, back end, and first and second side walls,

at least one extendible component having interior and exterior surfaces, and disposed within an aperture in at least one said side wall;

30 said floor comprising a floor panel support structure and at least one floor panel of which at least one outboard edge is movable by means of at least one actuator from a lower, downward sloping configuration wherein said at least one extendible component

may be placed in a retracted position over said floor panel, to a raised, level configuration available only when said at least one extendible component is extended.

43. The expandable living compartment according to claim 42 further comprising a
5 flexible skirt disposed around the circumference of said aperture and connecting said body of said vehicle to said exterior surfaces of said extendible component.

44. The expandable living compartment of claim 43 further comprising an air pressure source whereby the pressure within said expandable living compartment is elevated when
10 said extendible component is being retracted or extended.

45. The expandable living compartment of claim 42 further comprising an access system disposed between said support structure and said movable floor panel whereby said moveable panel may be further lifted in a controlled way from said support structure so as
15 to provide access under said moveable panel.

46. The expandable living compartment according to claim 42 wherein said actuator comprises at least one pneumatic bladder.

20 47. The expandable living compartment according to claim 42 further comprising a pneumatically actuated latch mechanism disposed between said floor panel and said support structure.

48. The expandable living compartment according to claim 42 further comprising parallel
25 synchronous drivers disposed at four corners of said interior of said extendible component whereby said extendible component may be extended and retracted through a respective said sidewall opening.

49. The expandable living compartment according to claim 48 wherein said parallel
30 synchronous drivers are concealed within said body of said vehicle and said extendible component.

50. The expandable living compartment according to claim 42 wherein said support structure further comprises fluid storage tanks.

- 5 51. The expandable living compartment according to claim 50 wherein said support structure comprises a fluid storage volume defined by a top skin and a bottom skin joined by a continuous sidewall, said bottom skin being arched upwardly both laterally and longitudinally, so as to have a higher center section and four lower corners, said fluid storage volume being divided into four fluid storage tanks, each said tank extending from
10 said center section to a respective said lower corner.

52. The expandable living compartment according to claim 42 wherein said floor panel comprises a flexible floor panel supported along a centerline thereof by said support structure such that opposing said outboard edges rest in said lower, downward sloping
15 configuration until elevated by said at least one actuator.

53. The motorized recreational vehicle of claim 1 further comprising a windshield aperture and an openable windshield assembly.

- 20 54. The motorized recreational vehicle of claim 53, said windshield aperture configured with a retractable screen assembly.